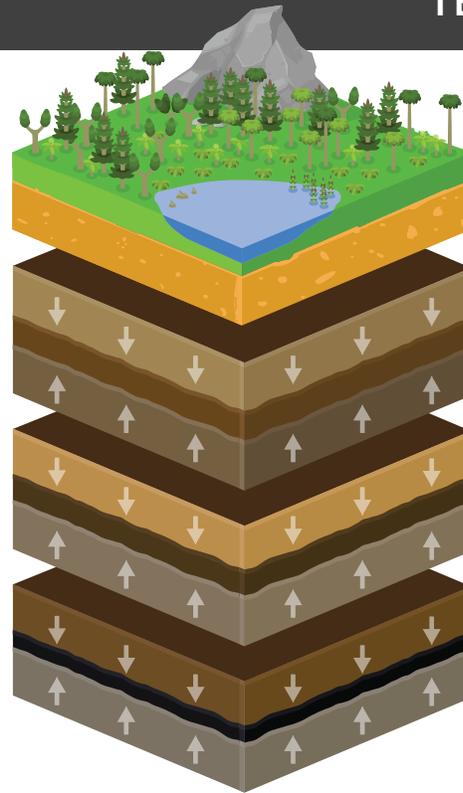


Coal Formation

- Starts when plants store energy from the sun, through photosynthesis
- Build-up of silt and sediments, along with movements of the earth's crust (tectonic movements) buries plants in swamps and peat bogs
- Buried swamps and peat bogs subjected to high temperature and pressure conditions and a lack of oxygen which stops the decay process and causes plant material to be transformed into peat and then coal where energy is locked in



Huge forests grew around 300 million years ago covering most of the earth

The vegetation decays and forms peat

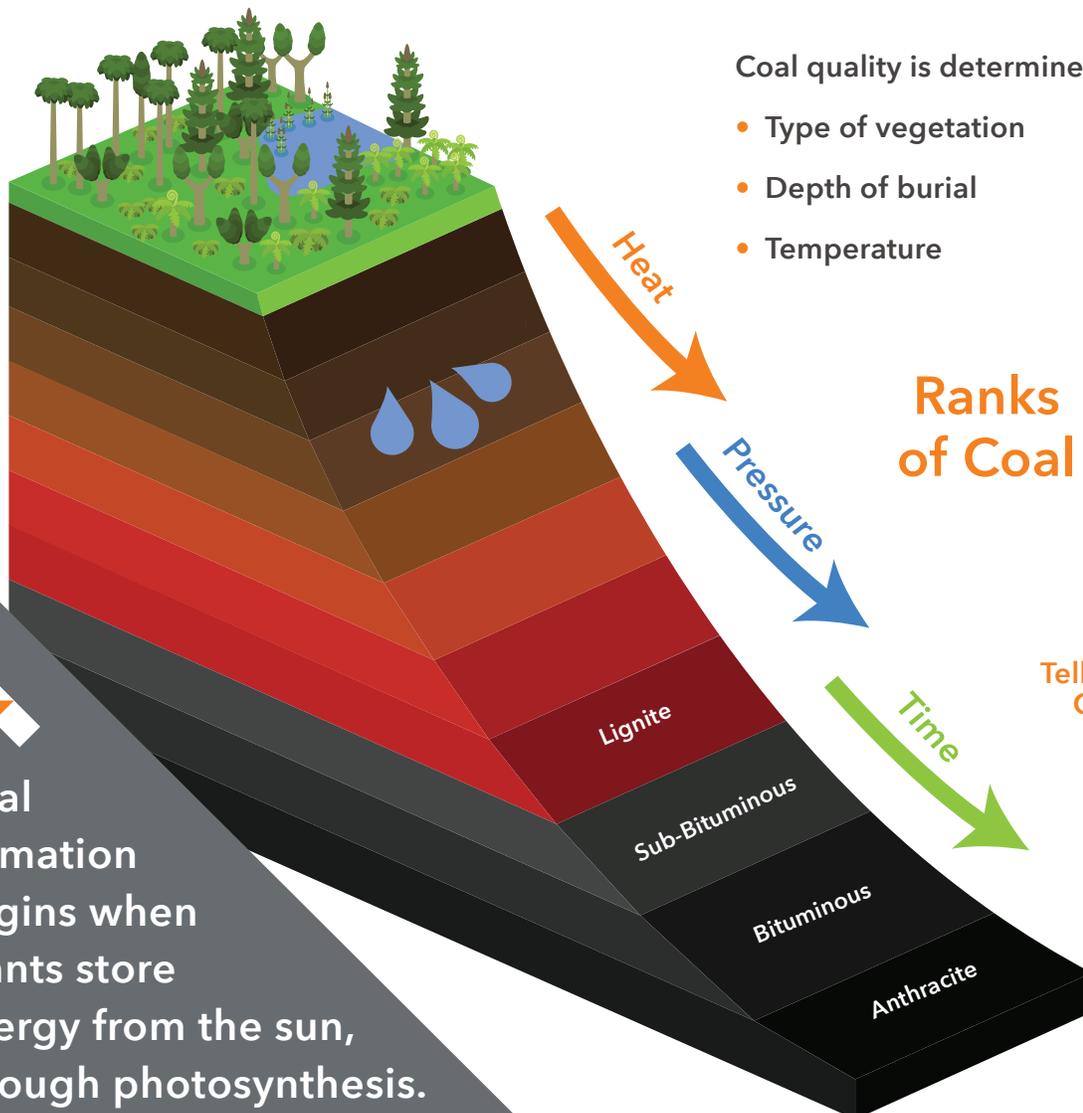
The peat is compressed between sediment layers to form lignite

Further compression forms bituminous and subbituminous coal

Eventually anthracite forms

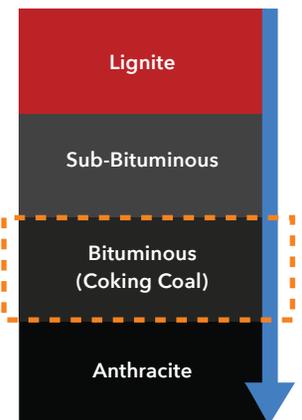
Coal quality is determined by a variety of factors:

- Type of vegetation
- Pressure
- Depth of burial
- Length of time the coal has been forming
- Temperature



Ranks of Coal

Increasing Carbon



Coal formation begins when plants store energy from the sun, through photosynthesis.

Coal Mining

Coal is mined from seams using two methods

- Surface or “open pit” mining
- Underground mining

Excavated coal is separated (processed) from rock material to prepare it for commercial use

The harder the coal is, the higher its energy value and rank

Harder, blacker coal contains more carbon and less moisture and ash than lower grade coal

The grade of coal and its caking ability (coal’s ability to be converted into coke which is a pure form of carbon that can be used in basic oxygen furnaces in steel mills) is determined by the coal’s rank

- Rank - measure of the amount of volatile matter, degree of metamorphism, mineral impurities and the coal’s ability to melt, swell and solidify when heated.

Canada is the third largest exporter of metallurgical coal, after Australia and the US

- Alberta and BC produce 85% of Canada’s coal
- Canada produced 62.3 Mt of coal in 2018 with 49% being metallurgical coal for steel manufacturing

Metallurgical Coal

Differs from thermal coal due to its carbon content, ability to swell, and caking ability:

- Fed into ovens and subjected to high temperature conditions without oxygen to prevent combustion
- Heated to approximately 1,100 degrees Celsius
- Removes volatile compounds and impurities to leave pure carbon (coke)
- Coke is then fed into a blast furnace with iron ore and limestone to separate the iron from its ore to create Pig Iron
 - Pig Iron is further refined to make steel

Tenas coal is mid-volatile, semi-soft coking coal:

- Limited global supply of semi-soft coking coal
- Preferred by steel mills since it fits more uniformly into coke oven blends
- Current semi-soft coal market is dominated by high-volatile semi-soft coals from Australia

Canada is the world’s third largest exporter of metallurgical coal.



Metallurgical coal differs from thermal coal due to its higher carbon content and the ability to swell.



TELKWA COAL
LIMITED